

Please amend the paragraph starting on line 12 of page 5 of the specification as follows:

Referring to Fig. 5, the third preferred embodiment of the present invention provides a structure for magnetizing a rotor magnet. The structure in Fig. 5 is the same as that in Fig. 2, except that the rotor has a magnet cylinder with a an irregular lumpy edge 5 which is a combination of a plurality of concave surfaces 52 and a plurality of convex surfaces 51 ~~arranged in an arbitrary (or random) sequence~~. Certainly, a structure for magnetizing a stator magnet is also suitable, wherein the stator has a magnet cylinder with a lumpy edge 6 shown in Fig. 6 which is a combination of a plurality of concave surfaces 62 and a plurality of convex surfaces 61~~arranged in an arbitrary (or random) sequence~~.

In The Drawings:

Please amend Fig. 5 as shown on the enclosed drawing with the proposed changes marked in red. A substitute drawing sheet showing the amended Fig. 5 is enclosed herewith.

Please add new Fig. 6 as shown on the enclosed drawing sheet. A proposed Fig. 6, shown in red, is enclosed as well as a back and white version of Fig. 6.

In The Claims:

Please rewrite claims 1, 5, 9 and 11 and add new claims 13 and 14 as follows:

1. (currently amended): A structure for magnetizing a rotor magnet of a motor, comprising:

a stator having a plurality of silicon steel sheets wound by a plurality of winding coils; and

a rotor, the rotor being a unitary magnet cylinder bounded by an inner surface and outer surface, wherein at least one of said surfaces is a unitary and continuous curve surface comprising a plurality of continuous curve surfaces, each curve surface having convex and concave curve portions for changing an air gap between the rotor and the stator while starting the rotor; and

~~a stator having a plurality of silicon steel sheets wound by a plurality of winding coils.~~

Claim 2 (canceled).

Claim 3 (canceled).

Claim 4 (original): A structure of Claim 1, wherein said plurality of silicon steel sheets is symmetrical.

5. (Currently amended): A structure for magnetizing a stator magnet of a motor, comprising:

a rotor having a plurality of silicon steel sheets wound by a plurality of winding coils; and

a stator, the stator being a unitary magnet cylinder bounded by an inner surface and outer surface, wherein at least one of said surfaces is a unitary and continuous curve surface comprising a plurality of continuous, each curve surface having convex and concave curve portions curve surfaces for changing an air gap between the rotor and the stator while starting the rotor; and

~~a rotor having a plurality of silicon steel sheets wound by a plurality of winding coils.~~

Claim 6 (canceled).

Claim 7 (canceled).

Claim 8 (original): A structure of Claim 5, wherein said plurality of silicon steel sheets is symmetrical.

9. (Currently amended): A structure for magnetizing a rotor magnet to start a motor easily, comprising:

a rotor, the rotor being a unitary magnet cylinder with an irregular lumpy edge comprising a plurality of concave surfaces and a plurality of convex surfaces for enhancing the start of the motor by developing the torque of the motor; and

a stator having a plurality of silicon steel sheets wound by a plurality of winding coils and mounted inside said magnet cylinder.

Claim 10 (canceled).

11. (Currently amended): A structure for magnetizing a stator magnet to start a motor easily, comprising:

a stator, the stator being a unitary magnet cylinder with an irregular lumpy edge comprising a plurality of concave surfaces and plurality of a convex surfaces for enhancing the start of the motor by developing the torque of the motor; and

a rotor having a plurality of silicon steel sheets wound by a plurality of winding coils and mounted inside said magnet cylinder.

Claim 12 (canceled).

13. (New) A structure of claim 1, wherein said a plurality of continuous curve surfaces have different arc centers.

14. (New) A structure of claim 5, wherein said a plurality of continuous curve surfaces have different arc centers.

REMARKS

Claims 1, 4, 5, 8, 9, and 11 are pending and rejected. Claims 1, 5, 9 and 11 are amended in this response and new claims 13 and 14 are added. Claims 4 and 8 are unchanged. Claims 2, 3, 6, 7, 10 and 12 had been previously canceled. The amendments to the claims more clearly define the applicants' invention and place the claims in better form for allowance or appeal. Applicants submit that the amendments describe the characteristics and efficacy of the embodiments of the invention so claimed. Basis for the amendments to the claims can be found in the Specification as originally filed (see, page 1, lines 13-16, page 4, lines 26-27, page 5, lines 1-2 and lines 20-24) and in original claims 3 and 7. No new matter is introduced by the present amendments.

The specification has been amended to conform the specification to the claims and the drawings. Basis for the amendment to page 5 of the specification is found in the drawings, specifically in Fig. 5, as originally filed. Basis for the amendment at page 4 and for the new drawing, Fig. 6, can be found in the specification at page 3, lines 19-24 and at page 5, lines 16-19. Basis for new Fig. 6 and for the addition at page 4 can also be found in original claims 11 and 12.

In view of the foregoing amendments and the following remarks, reconsideration and allowance of the claims, as amended, are respectfully requested.

The Drawings

The Examiner objected to the drawings under 37 CFR §1.83(a), stating that the drawings must show every feature of the invention specified in the claims. The Examiner required a proposed drawing or drawing correction in reply to the Office Action. Applicants submit a proposed amendment to Fig. 5 and a proposed new Fig. 6. The amendment to Fig. 5 showing the irregular, lumpy edges by adding new item numbers to more clearly point out the edges. New Fig. 6 shows lumpy edges having a plurality of concave surfaces and a plurality of convex surfaces. See the discussion below with respect to the §112, first paragraph rejections for a more detailed discussion of the drawings and the basis for the proposed changes.

Rejection under 35 USC § 112

Claims 9 and 11 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification and drawings. Regarding claims 9 and 11, the Office Action states that the drawings and the specification fail to disclose the rotor and stator cylinder having an irregular lumpy edge comprising a plurality of concave surfaces and convex portions.

To address the Examiner's concern, applicants have amended the specification to recite an irregular lumpy edge 5 as stated in claims 9 and 11 as originally filed, and have further amended reference number 5 in Fig. 5 to show that the lumpy edge comprises the concave and convex surfaces, 51 and 52, as stated on page 5, lines 15-16 of the specification as filed, i.e., "a lumpy edge which is a combination of a plurality of concave surfaces 52 and a plurality of convex surfaces 51." The reference number 5 in amended Fig. 5 clearly shows that it refers to both reference numbers 51 and 52. For purposes of illustrating the irregularity of the edge 5 in Fig. 5 as filed, applicants also submit a copy of Fig. 5 as originally filed, marked to show features illustrating the irregularity of the edge. Note in the portion numbered 5A, the outer edge forms a curve having a different arc than the outer curve of the section marked 5B. Note also that the section marked 52 has two faces, 52A and 52B which are of different surface areas and that both slant down and inwardly towards the inside surface of the rotor. The opposite section, marked 5C in the enclosed copy of Fig. 5, is also comprised of two faces 5C' and 5C", one having a larger surface area (5C') than the other (5C") and both sloping down, but outwardly towards the outer side of the rotor. Surface 51 as the specification states is convex, curving upwards. The section denoted by

number 5D has two faces, 5D' and 5D" that appear to be roughly equal in surface area. The opposite section, marked as number 5E also has two faces, 5E' and 5E", but they are not equal in surface area. Section 5E' is clearly shown to be larger in surface area than section 5E". The foregoing detailed analysis of Fig. 5 demonstrates that the Figure clearly illustrated from the time the application was filed, that the edge 5 is lumpy and irregular. Thus, the introduction of the term "irregular" in the claims is not new matter. The irregularity of the lumpy edge has been part of the application from the time of filing and was clearly in the possession of the applicants at that time. Moreover, the claims form part of the specification, so the fact that the original claims included this feature is further evidence that applicants had possession of this aspect of the invention at the time of filing the application.

With the amendment to Fig. 5, the feature of the rotor having a magnet cylinder with an irregular lumpy edge is now more clearly discernable in the drawing and in the specification. Therefore, the amended specification and revised Fig. 5 provide support for the claimed feature. Reconsideration and withdrawal of the §112 rejections of Claims 9 and 11 are respectfully requested.

New Fig. 6 is submitted herewith to illustrate the subject matter of claim 11. Basis for the structure shown in Fig. 6 can be found in the specification at page 3, lines 19-24 and at page 5, lines 16-19 describing a "stator magnet ... wherein the stator has a magnet cylinder with a lumpy edge which is a combination of a plurality of concave surfaces and a plurality of convex surfaces." Thus, no new matter is introduced by the amendment to the specification or the addition of Fig. 6.

Rejection under 35 USC § 103

1. *Claims 1, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Yamada (JP9-56092).*

The Examiner believes that Yamada discloses the features of "continuous curve surfaces and convex (3f) and concave (3g) curve portions for the purpose of improving torque.

However, the features of the present invention differ from the cited references as follows:

- (1) The permanent magnets 3d disclosed by Yamada are not unitary. The feature is different from that of the present invention, which is "a rotor, the rotor being a unitary magnet cylinder..." as claim 1 recites.
- (2) The main purpose of the curve surfaces formed by thick wall section 3g and thin wall section 3f disclosed by Yamada is to provide the uniform clearance t1 filled up with adhesive 3c to stick the magnets 3d to the yoke 3b.
- (3) However, according to the present invention, the rotor or stator has convex and concave curve portions for changing the air gap between the rotor and the stator while starting the motor so as to start motor easily by developing torque and radiating the internally generated heat quickly, thereby preventing the locked rotor condition as described in the last two paragraphs of the specification. See page 1, lines 13-16, page 2, lines 12-14, page 5, lines 1-2 and page 5, lines 20-24.

Therefore, the present invention is distinct from the teaching of the Yamada patent. Accordingly, it is respectfully submitted that claim 1, and therefore claim 4 that depends from claim 1, are patentable over the combination of the APA and Yamada references.

2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Yamada as applied to claim 1, 4 and 8 above, and further in view of Pletscher (1,566,693).

The differences between the present invention and the Yamada patent are set forth above. It is respectfully submitted that claim 5 and claim 8, which depends from claim 5, are patentable over the combination of these three references.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Tetsuo (JPO21219544).

The Examiner believes that Tetsuo disclosed the feature of "fixed protrusions (3e through 3h)" as an irregular lumpy edge of the present invention.

However, the features of the present invention differ from those of the cited references as follows:

- (1) The main purpose of the fixed protrusions (3e through 3h) disclosed by Tetsuo is to provide the clearance for adhesive 5 to stick the magnet 1 to the yoke 3.
- (2) However, the rotor having an irregular lumpy edge with concave and convex surfaces according to the present invention is suitable to start motor easily by developing torque and radiating the internally generated heat quickly, and preventing the locked rotor condition described in the last two paragraphs of the specification describe.

Therefore, the present invention is distinct from Tetsuo's patent. Accordingly, it is respectfully submitted that claim 9 is patentable over these references.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Tetsuo as applied to Claim 9 above, and further in view of Pletscher (1,566,693).

For the reasons stated above regarding the differences between the claimed invention and the teaching of the Tetsuo patent, it is submitted that claim 11 is patentable over these references.


Applicants believe that claims 1, 4, 5, 8, 9 and 11 recite a novel and nonobvious invention. Reconsideration of claims 1, 4, 5, 8, 9 and 11 and withdrawal of the §103 rejections are respectfully requested.

Conclusion

After amending Fig. 5 and adding Fig. 6, it is believed that claims 9 and 11 of the present invention satisfy the requirements of 35 U.S.C §112. Furthermore, according to the descriptions of the present application and the cited references, it is easy to distinguish significant differences between the present invention and the cited prior arts. The applicants believe that the cited references fail to disclose or teach the present claimed invention.

Applicant respectfully submits that all of the pending claims are in condition for allowance. Accordingly, reconsideration and passage of the present application to allowance at an early date are earnestly solicited. If the undersigned can be of assistance in advancing the subject application to allowance, the Examiner may contact the undersigned at the telephone number set forth below.

Respectfully submitted,

A handwritten signature in cursive script, reading "Christine R. Ethridge", is written over a horizontal line.

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Proposed REPLACEMENT SHEET

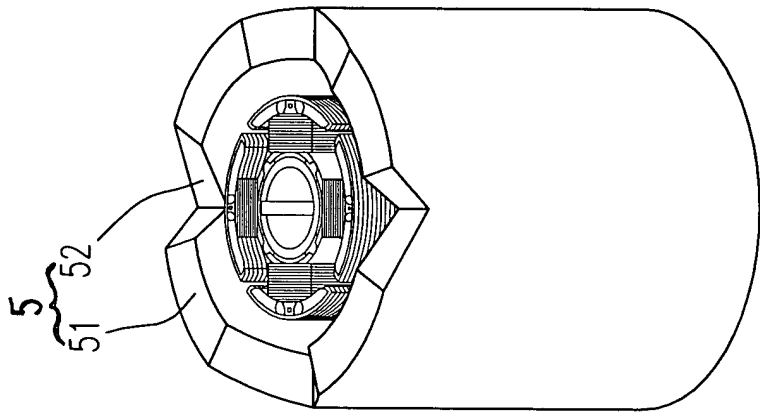


Fig. 5

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REPLACEMENT SHEET

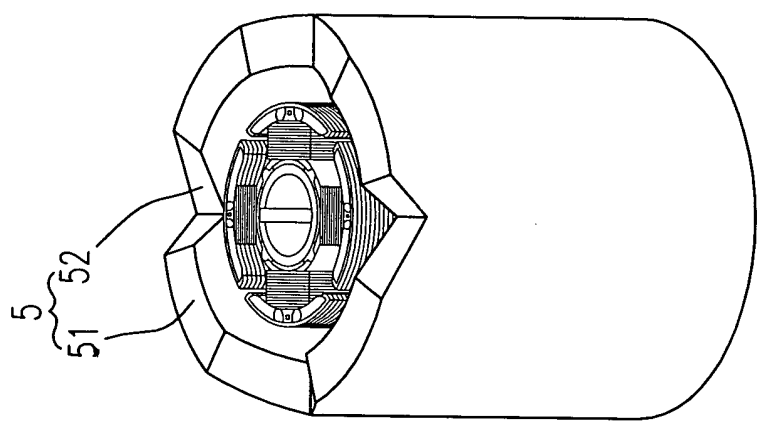


Fig. 5

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Appendix to Drawing Amendment
 Annotated Sheet Showing Changes
 and explaining view as discussed
 in Remarks.

5 ← This change shows that the lumpy edge 5
 is comprised of surfaces 51 and 52.

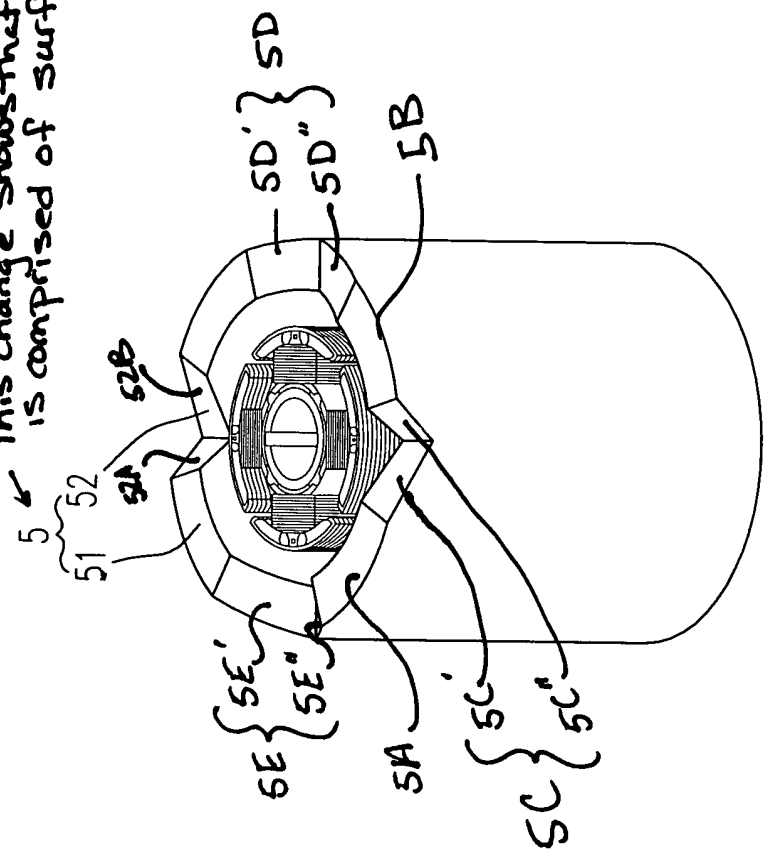


Fig. 5



Proposed New Figure

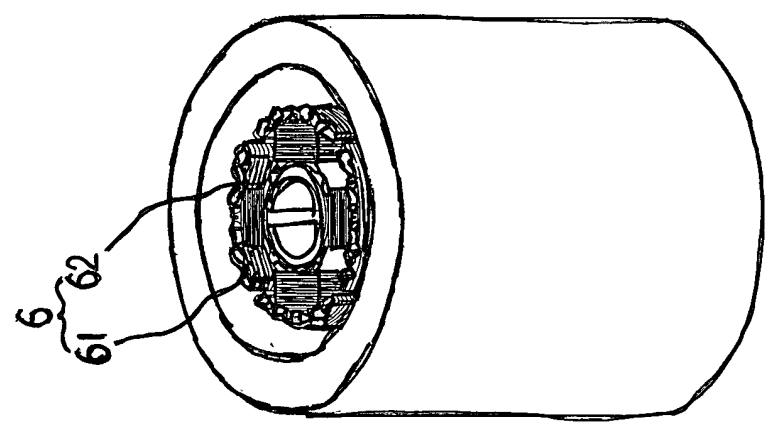


Fig. 6



NEW FIGURE

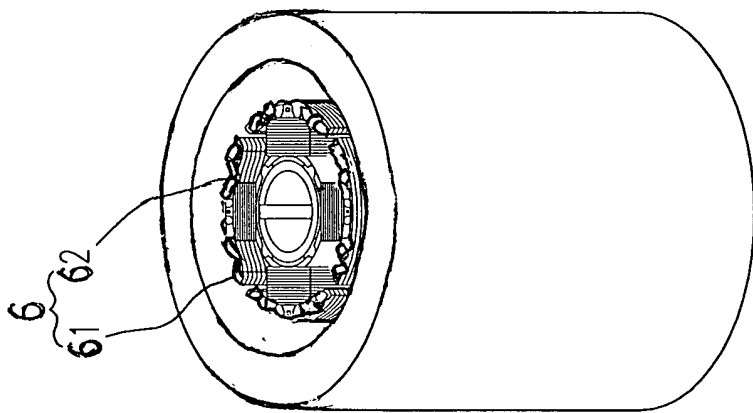


Fig. 6